ROCKS and MINERALS

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Contents for November, 1944

CHIPS FROM THE QUARRY 338
CALIFORNIA MINERAL PRODUCTION FOR 1943 338
WORLD'S DEEPEST HOLE IS IN TEXAS 338
GEOLOGY AS SEEN AT BUCK HILL IN THE POCONOS. *By Richmond E. Myers* 339
MEXICAN EXPEDITION PLANS ASCENT OF ACONCAGUA 342
WEST VIRGINIA'S ROCKS AND MINERALS. *By J. P. Erwin* 343
MENILITE FIRST FOUND IN FRANCE 345
A RARE AND NEW FIND AT GUADALUPE, CALIF. *By T. Orchard Lisle* 346
GEM ORTHOCLASE FROM MADAGASCAR 347
GEM OLIVINE FROM ARIZONA 347
MT. PELEE, MARTINIQUE 348
FLUORESCENT PALISADES HYALITE. *By S. B. Butler* 349
SOUFRIERE VOLCANO ON ST. VINCENT 349
CLUB AND SOCIETY NOTES:
- Los Angeles Lapidary Society 350
- East Bay Mineral Society 350
- State Mineral Society of Texas 350
- Lynn Mineral Club 351
- Mineral Society of Utah 351

RINGING ROCKS OF BUCKS COUNTY, PA. 351
MONAZITE SAND FROM TRAVANCORE, INDIA 351
GEM QUALITY CHALCOCITE AND COVELLITE FOUND IN ALASKA 352
GEM BERYL ONCE FOUND IN PHILADELPHIA, PENN. 352
WITH OUR DEALERS 352
INDEX TO ADVERTISERS 376

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ROCKS and MINERALS PEEKSKILL, N. Y., U. S. A.

The official Journal of the Rocks and Minerals Association

CHIPS FROM THE QUARRY

California Mineral Production for 1943 the Largest Since 1929

Under the direction of Walter W. Bradley, State Mineralogist, compilation of the final returns from mineral producers of California for 1943 has been completed by the statistactical section. The total value shown for the year was $426,445,280, being an increase of $17,706,846 over the total of 1942 which was $408,7738,434. The increase was due to stimulated output owing to war demand. There were sixty different mineral substances, exclusive of a segregation of various stones, grouped under gems; all 58 counties of the State contributing to the list.

World's Deepest Hole Is In Texas

The world's deepest hole, an oil well 15,279 feet deep (almost 3 miles), was recently completed on the rolling plains near Fort Stockton, Pecos Co., in southwestern Texas. It required several years' work to sink it.

Why the October Issue Was Late!

The last issue of *Rocks and Minerals* was held up by the post office (presumably in New York City) for ten days or more. Apparently this was due to the rush of mailing Christmas packages to our men overseas.

As magazines do not receive special attention during these war-time days, we may expect future issues to be held up every now and then and especially the next issue (December). Subscribers who reside west of the Mississippi should not look for the arrival of their copies until the 20th of the month.

This war will not last much longer and perhaps months before it ends, postal service may again become normal. In the meantime please be assured that we are doing our best to get *Rocks and Minerals* out on time.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933

Of ROCKS and MINERALS published MONTHLY at PEEKSKILL, N. Y., for OCTOBER 1st, 1943, — State of New York, County of Westchester.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared PETER ZODAC, who, having been duly sworn according to law, deposes and says that he is the EDITOR and PUBLISHER of ROCKS and MINERALS and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to wit:

1. That the name and address of the publisher, editor, managing editor, and business manager is PETER ZODAC, PEEKSKILL, N. Y.
2. That the owner is: PETER ZODAC, PEEKSKILL, N. Y.
3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: NONE.
4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affidavit's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affidavit has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

PETER ZODAC.

Sworn to and subscribed before me this 9th day of October, 1944.

ROSE McCAFFREY,
My commission expires March 31, 1945.

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Whole No. 160

GEOLOGY AS SEEN AT BUCK HILL IN THE POCONOS

By RICHMOND E. MYERS

Dept. of Geology, Muhlenberg College

To tell the story of the Geology at Buck Hill is to tell the story of the Poconos, for it is only by understanding the whole that we can fully appreciate the part.

Location

Buck Hill is in Barrett Township, Monroe County, eastern Pennsylvania—one mile west of Canadensis, Its altitude at the inn, as shown on the Pocono Quadrangle (U.S.G.S.) is about 1350 A.T.

Sedimentary Rocks on Buck Hill

The rocks one sees exposed in the woods on Buck Hill, and in the gorge at the falls, are known as sedimentary rocks, that is, they are composed of fragments that at one time were parts of other rocks. These preexisting rocks were broken up by forces of weathering, frost, rain, hail, etc., and their debris washed down by streams to the sea, where they were eventually deposited in layers on the sea-bottom. This same process is going on today. At a later date the sea-bottom was elevated, and the layers of deposited material, now cemented and lithified, rose as the rocks which you now can see. The layers are still clearly visible, and are known as strata.

The types of sedimentary rocks visible in this area are three in number, and can easily be identified. The first of these is sandstone, and is made of closely cemented sand grains all about the same size The second in shale, which is composed of grains of silt and mud, so small that the individual grains are not visible without magnification. The third is conglomerate, which contains grains of various sizes and materials, from pebble size down thru sand grains to silt particles.

It might be well to explain where the original materials that compose these rocks came from, and how they arrived in their present position.

Countless eons ago, a great continent or land mass existed somewhere southeast or along our present Atlantic coast. The region now occupied by the Poconos was then part of a submerged trough, known to geologists as a "geosyncline", which reached from Alabama northeast beyond Maine. Into this trough the sediments from the land mass which has been named "Appalachia", were washed and deposited. This continued for millions of years. The trough became filled, and Appalachia was worn down—almost to sea level. Eventually the shift of weight on the earth's surface, caused by the removal of this material from one great region, and its resulting deposition in another, resulted in the adjustment of the earth's crust to the shifted load, and the bottom of the trough was slowly heaved up to great heights, and the strata were folded and crumpled in this great uplift or mountain building era, known as the Appalachian Revolution, and named from the mountains that it created.

These mountains after some more millians of years passed, were in turn worn down by erosion, until they became almost a level plain. Such a feature is called a "peneplain" by physiographers.

This peneplain was in turn slightly uplifted and gently warped, thus making essentially the present land surface of the eastern United States. Thus we can see that the rocks which form this Pocono area are the consolidated masses of sediments that were at one time washed from Appalachia into the sea, and later elevated into their present position.

Evidences of Glacial Deposits

However the final scene was enacted in the relatively recent geological past with the coming and passing of the last great Ice Age. There were several periods of ice encroachment in Monroe County, and several inter-glacial periods while the ice had melted back to a more northern position. An ice age usually consists of several advances and corresponding retreats of the ice front. Roughly speaking the last ice left this region in the neighborhood of 50,000 years ago, and to people used to thinking in terms of millions of years, such as geologists are usually doing, this was only yesterday. As a result there is much evidence left lying around the landscape to tell us about glacial times. Large areas of ground are covered with bowlders, cobbles, pebbles, and smaller fragments of rocks that are decidedly not of local origin. Such material is known as glacial till. Many of the bowlders are so large that the only agent that could possibly have moved them any distance is ice, and geologists have suggested that a number of these visitors had their origin in the Adirondacks, Ontario, and Labrador.

In many places at higher elevations where the bed rock of the Poconos is exposed, parallel scratches or grooves may be seen in the sandstones, mostly in a northeast-southwest direction. These "striae" are the work of the large boulders and cobble frozen in the bottom of the advancing ice, gouging out these marks as they were slowly but surely moved along with the ice. Such scratches may be seen on the summit of Buck Hill, west of reservoir.

Another interesting type of evidence, observable best by studying topographical maps of the area, consists of drainage changes shown by the present position of streams flowing thru the region. A great deal of water from the melting ice washed thru the region in front of the ice cover, and as the ice front melted back, this melt water gradually became less and less. Finally it vanished entirely leaving empty channels and at places where it had been ponded in front of the ice, old shore lines. Many valleys thru which streams flowed prior to the invasion of the ice were filled with till, either pushed in by the ice or washed in by the melt water. Several such filled valleys exist in Monroe County, one just north of Buck Hill beyond the creek. Buck Hill Falls is the result of a valley being filled with till, and the stream no longer being able to find its way thru its old channel, escaped from its original valley by flowing over a low spot in the rim, and gradually worked its way back to its present position, thus forming the gorge below the falls.

Geology as Seen From Buck Hill Inn

If one goes to some high point, such as the observation deck of the Inn at Buck Hill, and is fortunate enough to have a clear day, much more geology may be observed. To the north and west lies the wall of the Pocono Escarpment, the even-crested top of which forms the rim of the Pocono Plateau, with an average elevation of slightly over 2000 ft. Looking south one sees on the horizon the line of the Blue or Kittatinny Mountain, broken by the Delaware Water Gap. Between this mountain and the Pocono Plateau a series of parallel ridges, all lying more or less in a northeast-southwest direction, with long narrow valleys in between. This region is a portion of the area known to physiographers as "The Valley and Ridge Province", and its name is indeed descriptive. The ridges are composed of the harder rocks, sandstones and conglomerates, while the valleys are composed of the softer shales and limestones. An interesting feature of this province, is the transverse drainage pattern. All the major streams flow across it at right angles to the mountain structure, thru the great gaps that they have cut in the mountains. In this region the Delaware is a splendid example, and

a little further west the Lehigh, Schuylkill, and Susquehanna, all cross the province in the same manner. Geologists are not in complete agreement as to exactly why this is the case, nor do they explain the origin of the water gaps to each other's satisfaction. It might be a good idea to describe two of the major theories concerning the origin of gaps, and allow the reader to draw his own conclusions.

Two Theories on the Origin of Gaps

Theory number one postulates that after the development of the peneplain the major streams flowing over its relatively even surface gradually cut deeper and deeper into the folded rocks. The tributary streams to the main streams found their courses in the softer rocks, and began to erode long narrow longitudinal valleys. The main streams which were those flowing down the general slope of the land across the structure to the sea, continued in their courses, while their tributaries were busy etching out their long valleys, leaving the harder rocks to stand up as ridges between them. The major streams began to flow across these ridges as they slowly took form, and of course cut down thru them at the same time in order to keep at grade with their tributaries. Thus the water gaps were formed.

Theory number two states that after the peneplain was formed, the whole area was again submerged, and a cover of coastal plain sediments was laid down upon it. Later this area rose, and the streams formed on the loosely consolidated surface of recent sea-bottom sediments, were lowered upon the buried folded structure as they cut down thru the cover, and thus their courses were established at right angles to the structural trend. As they cut deeper they cut gaps thru the ridges. Eventually all of the coastal plain cover was removed by erosion, and we have the present landscape.

It is not our purpose here to discuss the good and bad points of these theories, but merely to call the reader's attention to them, and in passing mention that there are several others that have been advanced by students of this subject which space does not allow us to outline here.

In the origin of the wind gaps there is little difference of opinion. Originally these gaps were water gaps, but the streams that flowed thru them were removed by various causes, chief of these being piracy. This means that one stream is "captured" by another stream having a steeper gradient. Altho other factors may remove streams from their gaps, such as glacial changes of drainage, the great majority of the wind gaps in the Valley and Ridge Province had their streams removed thru the work of piracy that was in turn the result of headward erosion.

Poconos 350,000,000 Years Old

In closing let us again turn our attention to the rocks of the region. How old are they? Roughly about three hundred and fifty million years old. Now that is a lot of years to account for, and the question may reasonably be asked, "How do you know it?" Geologists have various ways of reckoning time and determining the ages of the rocks, but among these ways there is one which makes use of the remains of one time living creatures that are found in the rocks of today. These remains are called "fossils". When the sediments that later became consolidated to form the rocks of the Poconos were being deposited in the sea, countless numbers of creatures lived in the sea, as is the case today. However, at that time, called by geologists the Devonian, many creatures were living that no longer exist is our times, as they have become extinct. Their remains found in the rocks, help the geologist date that rock, for when they died their shells or skeletal remains fell to the bottom and became incorporated in the muds and slime that later became the rocks we see in the Poconos today. At many places between the Blue Mountain and the Pocono Escarpment, remains of these creatures may be found in the rocks. Mostly they consist of sea shells called Brachiopods, but there are also remains of corals, and queer little animals that resemble the horse-shoe crab of today in minature, known as Trilobites. Between Stroudsburg and Analomink there is a coral reef exposed along the

side of the road (U.S. 90) that can be traced halfway across Pennsylvania. As these fossils are the remains of life that existed in the Devonian Period, we can date the rocks in which they are found as Devonian, and thus form some idea of their age.

So we see that all around us in the Poconos there are clues by means of which we can piece together the story of the earth's past, and surely as we ponder over these things in our minds, we can not help but agree with the thoughts of the poet Tennyson:

"There rolls the deep where grew the tree,
O Earth what changes hast thou seen,
There where the long street roars, hath been,
The stillness of the central sea."

MEXICAN EXPEDITION PLANS ASCENT OF ACONCAGUA, HIGHEST PEAK IN NEW WORLD

MEXICO CITY—A band of hardy Mexican alpinists is planning to leave for Chile soon to attempt the ascent of 22,834-foot Mount Aconcagua, highest mountain in the Western Hemisphere, and rescue from its peak a Mexican flag deposited there two and a half years ago by a previous conqueror of the Andean giant. At the same time, the group will gather scientific data which is expected to prove of considerable importance.

It was on March 31, 1942 that Juan Jorge Link—the "Lone Condor of the Andes"—set foot for the fifth time on the tiny plateau—26 feet wide by 100 feet long—which crowns Aconcagua's eternal snows and glaciers. With him he carried a small metal case, containing the flags of nine American republics and Canada, which he half-buried on the peak as a symbol of American unity and as a challenge to those who might essay the climb in the future.

When Link reached the base of the mountain on the Argentine side, he was rushed to Ciudad Mendoza, where eight toes were amputated as a result of frostbite. Nevertheless, that misfortune failed to deter subsequent attempts by American alpinists to retrieve the flags of their respective nations. Finally, only two standards remained on Aconcagua — the Mexican and the Canadian.

In February of this year Link organized an expedition to scale the mighty bulk of the mountain for a sixth time. With him went his wife, a geologist, an engineer and five others. Tragedy overtook the party, and its members were lost for all time in the silent snows of Aconcagua.

Their death joined their names to many others who have perished on Aconcagua since Matias Zurbriggen made the first recorded ascent to the mountain's top in 1897. Among them were Hans Stephanec, lost in 1926; Captain B. Marden, who died on Aconcagua two years later; Carlos Lobos, who fell victim to the mountain's icy winds and steep slopes in 1932; Helmut Reising, killed in 1932; Fernando Solari and Ruperto Freile, lost in 1937; Father Jose Kastelic, who perished while on a climb headed by the ill-fated Link, and many others.

Undismayed by this tragic list of Aconcagua's victims, the Mexican alpinists are looking confidently forward to the day when they will bear their country's banner triumphantly down from the highest point on the American continent .Every possible preparation is being made and every precaution taken to ensure the safety of the group and the success of the venture.

Headed by Roberto Mangas, who has been scaling Mexico's loftiest peaks for the past 22 years, the group will include such seasoned alpinists as Alberto Lebario, of the Mexican Explorers Club, Mario Ezcurdia, Mexican journalist, Ricardo Lujanbio, Raimundo Luna, Augustin Hernandez, Moises Abrego and Luis Bravo.

WEST VIRGINIA'S ROCKS AND MINERALS

By J. P. ERWIN
710 Butler St., Charleston, W. Va.

Not only have the rocks and minerals added much to the beauty of West Virginia, the Switzerland of America, but these natural resources have also been of great economic value, and they have been useful in the development of the state. These rocks and minerals were useful even before the white race inhabited the state. The mound builders and the Indians found use for the flint and the limestone in making their crude impliments and their weapons of warfare. The flint quarries in Doddridge County, the many piles of flint and stone chippings scattered over the state, the large quantity of these impliments and weapons found in the state, bear evidence of this. These races not only made use of the rocks, but they discovered the usefulness of the minerals. They found healing in the mineral springs, and they discovered that salt could be made by boiling the waters from the springs where the buffaloes licked.

When the white man came to settle in the State he also found use for the rocks and minerals. He began to quarry out the limestones and sandstones and to erect buildings of these materials; many of these old stone structures are standing as landmarks today. The old Stone Church in Lewisburg, built in the year 1796, where generation after generation have gathered to worship and where the gospel is still preached, is one of the outstanding landmarks. The old stone court house built before West Virginia became a state, and the Stewart mansion, with walls two feet thick and rooms more than twenty feet square, built of limestone, are some more of the interesting landmarks in Greenbrier County. There are many more of these old stone buildings in the state and there are many new modern churches and homes that have been built of this native stone; these architectural structures are buildings of lasting beauty.

Some Scenic Spots of Interest

Nature has left much beauty and many scenic places of interest nestled among the hills of West Virginia and along the crystal streams that flow gently over pebbles then roar through rocky gorges to dash over rough and rugged cliffs into beautiful waterfalls. These beauty spots have inspired artists to paint great pictures, and poets to write beautiful poems.

There are many scenic highways in the state, some of these have been blasted out of solid rock, and the rocks, sand, and gravel of the state have furnished the materials to build these roads.

Among the scenic places of interest is Hawk's Nest, at New River Canyon, in south-central West Virginia, on W. Va. 21 (better known as U. S. 60). The canyon is 585 feet deep, and the Hawk's Nest Cliff is over 500 feet high. Every year thousands of tourists stop to view the breath-taking splendor of this place of beauty. Near the lower end of the canyon, which is the best known part of it, the rock is Pottsville sandstone. Farther up the Canyon, near the Virginia line, there are older formations, from Mississippian to Ordovician.

The Pinnacle Rock, near Bluefield, can be seen for many miles as it stands out on an elevation of 2,700 feet. It affords a wonderful view, looking out over several ranges of mountains. The rock is Stony Gap sandstone which belongs in the Mauch Chunk group of the Upper Mississippian formation.

The Hanging Rocks, in Hampshire County, are over 300 feet high. They consist of very hard white sandstone; this formation is known as the "White Medina" in West Virginia, and the "Tuscarora" in Pennsylvania.

The Burning Rocks in Logan County are also of much interest. A seepage of natural gas which would burn gave the rocks their name. There is a "burn-

ing Creek" in the vicinity.

The Seneca Rocks, on the Seneca Trail, are 900 feet high and stand out like a beautiful temple. It is a white Medina sandstone, the same as "Hanging Rocks." This sandstone is so hard that it is practically a quartzite.

Organ Cave

West Virginia has many interesting caves, Organ Cave, in Greenbrier County (in the southern part of the state), is one of the most famous. This cave gets its name from a formation in it that resembles a pipe organ and every stalactite in this formation, when tapped, produces a different sound, or musical tone. This cave, as well as many others in the state, has large deposits of saltpeter; this was mined and used in the manufacture of gunpowder during the Civil War. Many of the old saltpeter hoppers are still standing in this cave.

Petrified Forests in West Virginia

Near Charleston, the capitol of the state, in central Kanawha County, (in the southwestern part of the state), is the Davis Creek Petrified Forest. Up to three or four years ago very little was known about petrified wood in this section of the state. The discovery of the petrified forest was made by a man in bad health whose doctor advised him to get out in the woods, build himself a camp, and live there. The man followed the advice given him and when he began to clear the land he found large quantities of petrified wood. One of our daily papers gave the newly discovered petrified forest a big write-up. Many people visited it to return home with much material for rock gardens, fireplaces, and other purposes. I have seen a fireplace and mantle built of this wood and it really is a thing of beauty.

I have made many trips to the locality and have collected a lot of nice specimens. I usually go when the creek is low—in a dry period—and find nice specimens in the creek bed. On my last trip I found three logs about a foot each in diameter.

The wood is dark brown in color, cellular to compact; the cellular portions being encrusted with brilliant drusy quartz.

The Fossil Park at Elkins is better known as the Fossil Tree Park; it is about 50 miles in length. This park has many fossil trees in it, some of them very large, even up to 10 feet in diameter. There are also many sea fossils in some sections of the park which indicate that this area was at one time a sea bed.

Elkins is in the northern part of the state (in the northern part of Randolph County).

Mineralogy

Although West Virginia is a great coal mining state, minerals suitable for a collector's cabinet are very scarce. The most noted locality is near Berkeley Springs, in northern Morgan County, in the northeastern part of the state. Here an Oriskany sandstone is quarried and crushed to make glass-sand. In pockets of this sandstone beautiful milky quartz crystals and rock crystals are found.[1]

At the manganese mines of Sweetsprings, in eastern Monroe County (in the southern part of the state), black nodular masses of psilomelane, which often make fine specimens, occur in a residual clay.

The chief mineral of the state is coal —49 of the 55 counties produce coal. McDowell County is the largest coal producing county in America; for every acre of surface in the county there are four acres of coal.

The state has many valuable deposits of potter's and brick clay. The largest single pottery in the world is in West Virginia, and a fine quality of brick is made from the brick clay.

A very old and important industry of West Virginia is the manufacture of salt, and the production of salt brine which is of vital importance in chemistry. These salt wells supply our immense chemical plants and will continue to supply them as the supply

[1]The Quartz of Berkeley Springs, W. Va., by Dr. A. C. Hawkins, *Rocks and Minerals*, Oct., 1940, pp. 336-338.

cannot be exhausted. No rock salt is mined in the state. A most interesting report on the rock salt deposits of West Virginia was recently released by the State Geological Survey, in which the author, Dr. James H. C. Martens, summarizes his investigations as follows: "Salt in beds thick enough for commercial development probably occurs under an area of 2,400 square miles or more in the northwestern part of West Virginia. The depth varies from a little under 5,000 feet to about 10,000 feet. The salt deposits are of Upper Silurian age and are connected with those in Ohio and Pennsylvania."[2]

Among the other minerals occurring in West Virginia are:

Barite: Found in limestone concretions in shale at Morgantown. Also in limestone concretions in a much older shale formation at Petersburg.

Celestite: Occurs with native sulphur and selenite in a quarry in Silurian limestone near Oak Flats, Pendleton County.

Diamond: In April, 1928, the largest diamond found in eastern United States and one of the largest ever found in North America, was found in Peterstown, W. Va., by "Punch" Jones. This stone has already been described in *Rocks and Minerals* (July, 1944, p. 202) so no more will be said about it. This reference is inserted only to emphasize that in states, little known for choice mineral specimens, unusually interesting minerals may often be found.

Fluorite: Purple fluorite occurs in a limestone quarry one mile east of Ronceverte, Greenbrier County; also from a quarry in Silurian limestone near Oak Flats, Pendleton County (same locality as for celestite).

Grahamite (Asphalt): Once extensively mined 25 miles southeast of Parkersburg, in Ritchie County, where it fills fissures in sandstone of carboniferous age.

Hematite and Limonite: These are the chief ores of iron occurring in West Virginia and many deposits have been mined. Some mines are near Wardensville and Perry, in Hardy County, and 1 mile southeast of Keyser, Mineral County. Nice limonite geodes are found scattered over a wide area about 8 miles from Charleston.

Oil: Stored away among the rocks of West Virginia are great quantities of oil and gas. Although some wells have to be drilled several thousand feet deep, large producing wells are brought in and furnish gas and oil to run our cars, heat our homes, and drive wheels of industry.

Mineral Springs: There are many mineral springs with their healing waters. The famous White Sulphur, the old Salt Sulphur, Red Sulphur, and Blue Sulphur, are the most noted. Their post offices carry the same names as given the springs.

West Virginia, the Little Mountain State, so richly endowed with nature's treasures, is continually giving its abundant wealth and doing its part to supply the needs of the world.

Acknowledgment

The grateful thanks of the writer are extended to Dr. James H. C. Martens, State Mineralogist of West Virginia, for his cordial assistance in supplying the geological data used in this paper and for the notes on barite, fluorite, and celestite.

[2]Rock Salt Deposits of West Virginia, by James H. C. Martens, Mineralogist. West Virginia Geological Survey, Bull. No. 7, Morgantown, W. Va., 1943, P. 58.

Menilite First Found in France

Menilite is a very impure form of opal which occurs in compact concretionary forms—tuberous, reniform, kidney-shaped, etc. It is opaque and of a brown or bluish-gray color internally but its exterior is generally bluish-brown. The mineral was first found on Mount Menil, near Paris, France, over 100 years ago, where it occurred and still occurs imbedded in gypsum and in marl. It received its name from the locality.

A RARE AND NEW FIND AT GUADALUPE, CALIF.

BANDED DOLOMITE FLUORESCING BRILLIAND REDS AND FORMING GOOD POLISHING MATERIAL

By T. ORCHARD LISLE

About seven miles southwest of San Jose, Santa Clara County, California, and nearly ten miles by road, there is a mine located on the left bank of the Guadalupe River in one of the most beautiful canyons on the West Coast of the United States. This is the Guadalupe Cinnabar Mine, first worked for quicksilver in 1856, and today operated by the Laco Mining Company under the direction of H. N. Mason, president. The hills towering over three thousand feet above the mine are well wooded, adding to the scenic charm. No more desirable surroundings could be found for locating mineral specimens, so may it well be regarded as a rock hunter's paradise by those fortunates who have been privileged to wander over the big mine dumps, especially as the stones are lovely, too, when cut and polished, or placed under the ultra violet light.

I have visited this location half-a-dozen times during recent years, once with the Northern California Mineral Society whom I led to the spot after my first trip. It is only about 60 miles from San Francisco. Each time I have come away with finer specimens than on previous visits, and my last visit brought the best results of all. Yes, a real find!

The 2,500-acre property is strictly private, and can only be reached by crossing a rickety bridge, marked unsafe, or by wading the creek, and the signs "no trespassers" should be respected by obtaining permission in advance to look over the dumps.

At some time in the ancient geologic ages, the Franciscan sandstones and shales were intruded by peridotite, the intrusion being accompanied by intense fracturing of the rocks, and the peridotite was altered to serpentine. Further alteration from the action of mineralizing thermal waters developed extensive areas of carbonate-silica rock, the latter in places becoming incoherent and porous, allowing deposits of cinnabar to form. Associated minerals include opal, opalite, dolomite, quartz, pyrite, chalcedony and quartz. Occasionally one finds small pockets of what seems to be pitch-like material and heavy oil. At the Mirabel mine, 150 miles north of Guadalupe, the oil in similar pockets in the rock contains curtisite, giving the liquid brilliant fluorescent qualities. Whereas, the fluorescent qualities of the Guadalupe dolomite and opalite do not appear to be derived from this hydrocarbon, so presumably it contains none.

A casual search of the mine dumps will reveal few stones of interest, because for years collectors have been combing the surface for the choice specimens. However, if you know what to look for and can recognize indications through the rusty crusts, you will not have much difficulty today in finding excellent materials. Most of the rocks are stained and surface-weathered, so seem far from attractive, and in any event only one piece in fifty is worth taking away. Much of the material, however, is so compact in structure and so hard that the surface rust does not penetrate more than about one-sixteenth of an inch, with the interiors largely free from cracks and pits.

When sawn and polished, the opalite —which often is well banded—will be found to have wavy layers of brown, white, blue and several shades of grey, and occasionally with fine veins of silver-colored pyrite running through the structure. It makes unusual cabochons, paperweights, ashtrays, and even bookends if you are lucky enough to discover a rock large enough. Some of the stones cannot be beaten for soft-toned beauty, augmented once in a while by small bright red cinnabar crystals in the serpentine forming part of the rock. Added to these features

you have its fluorescence. Could you ask for more qualities?

Finding of the Dolomite

On the occasion of my most recent visit, made in connection with securing technical information on the operation of the new $90,000 mill at this mine for an article for a mining publication, I walked up the hill to a new "open pit" to watch progress and methods of operations of the bulldozer. I noticed a boulder that had been pushed to one side by the machine;—the workmen had been building fires alongside to heat their coffee, so the outside of it was charred black and brown.

A little hammering and close examination revealed that the boulder was a mass of wavy banded dolomite of different coloring from most rock of this kind. A "rock hound" friend of mine—R. F. Henley—was with me, and we set to work on the boulder. We broke off a number of pieces, including one of 30 lbs. and another of 15 lbs., suitable for two pairs of book ends.

When I arrived home I discovered that this brown-and-white banded dolomite fluoresced in brilliant reds from light to a deep tone. I have never seen any similar material, and there was no sign of any more in the locality, although the chances are that when the open pit gets deeper there will be. However, we took away less than five per cent of the boulder, so there is plenty left, as I write, for other rock hounds. When cut and polished the book ends are going to be lovely in both daylight and under the black lamp. How they will react to mineral-light or the cold quartz lamp I do not yet know. Meanwhile, Henley and I have something that I don't think anyone else has.

Blue Opal Also Found

But, this is not all. On the way down the hillside I noticed a "gleam" in the bank at a cutting. Digging for a few minutes we uncovered a vein of a very pretty translucent blue opal. It was getting late, and we had no time to dig more than a foot deep, also too much digging may have caused a small landslide on to the new mine road, which would have been regretable in view of the courtesy shown by the mine

The author digging out a chunk of blue opal at Guadalupe.

owner. The opal near the surface gave promise of finer quality at greater depth, while it looks as if the vein runs further back away from the road where it would be safe to dig. This, however, must wait until the time when gasoline is more plentiful.

Gem Olivine from Arizona

Olivine, also known as chrysolite, and Job's tears, is a greenish silicate which is much used as a gem. The best specimens come from St. John's Island, in the Red Sea, (belongs to Egypt) but nice specimens are also found in Arizona. The most important locality in Arizona is the Navajo Indian Reservation in Apache County (about 10 miles north of Fort Defiance). Here the olivine occurs as loose pebbles on the surface of the ground (in the sand of the region. A large amount of the pebbles have been collected and sold to collectors and to jewelers.

Gem Orthoclase from Madagascar

Orthoclase is a feldspar common in many pegmatites and other rocks but with few exceptions it is always opaque. Gem quality orthoclase is so rare that many collectors never even heard of it.

At Itrongahy, in southern Madagascar, transparent, yellow to lemon-yellow, crystals of orthoclase are found in pegmatite which make very beautiful gems when faceted.

MT. PELEE, MARTINIQUE

Martinique is a French island in the West Indies. Its geographic location is about 14° 40′ N. Lat., and 61° W. Long. Its length is 40 miles, greatest width 21 miles, and area about 380 sq. miles. The greater part of the island is of volcanic origin.

On the northwestern coast is the volcano of Mt. Pelee, the highest peak on the island; its elevation is about 4,900 feet above sea level.

On May 8, 1902, Mt. Pelee blew up, causing the greatest catastrophe in the recorded history of the western hemisphere. St. Pierre (at the foot of Mt. Pelee), the then largest city on the island and the neighboring hamlets were entirely destroyed. The number of victims who perished is estimated at 30,000. Only one person in the city escaped—a prisoner in the city jail—and he through fear, was more dead than alive.

Before the awful explosion, the height of Mt. Pelee was about 700 feet lower than it is at present. Nevertheless the volcano can still be climbed as the ascent of Pelee is neither dangerous nor particularly difficult. The weather is generally the chief obstacle. One starts for the volcano from St. Pierre, which has been slightly rebuilt. A good highway from St. Pierre climbs abruptly towards the volcano, ending at the village of Morne Rouge which sits on a ridge of one of the great buttresses that uphold Pelee, and which towers 4,429 feet above the Caribbean Sea. From here the climb is more fatiguing as one has to follow a path to the summit of the volcano—and the weather from here begins to assert itself. It is often so cold that one shivers in his summer attire (the island is in the tropics); downpours of rain are also frequent; while heavy mists which hide everything from view are also common.

Once the summit is reached one often sees nothing of the crater except an immense void filled with swirling gray mist. Then one must wait—often an hour or so—for the mist to rise and when it does, a great valley filled with scrub vegetation is spread before him. The floor of the crater can be descended, via a path, and explored. Gigantic masses of rock are tumbled around everywhere while here and there fumeroles (or smoke holes) are seen which emit gray clouds of vapor and sulphurous

(*Continued on Page* 351)

Mt. Pelee, Martinique

FLUORESCENT PALISADES HYALITE

By S. B. BUTLER

Occurrences of hyalite have been noted at several points along the Palisades sill (1), where it was probably deposited from hot water during the period immediately following the intrusion.

During road construction at the level of the lower contact, about one mile north of George Washington Bridge, hyalite was found as typical, thin, limpid crusts forming patches on the joint planes of a buff or pink, fine-grained arkose. Some specimens showed a vivid green fluorescence; some were entirely inert. This fact was discovered after some very heavy rocks were lugged away. However, there is a simple way of distinguishing the fluorescent material in the field.

All the fluorescent hyalite from this locality is associated with a thin greenish or canary yellow incrustation which is often overlain by the hyalite. The quantity of this substance is very small, but none of the specimens which failed to fluoresce showed any trace of it.

Several attempts were made to identify this yellow mineral, but since it occurs in such minute amounts, no absolutely positive identification, even with microchemical tests, could be made. However, I am sure that when better specimens are secured that it will be identified as carnotite.

While both the hyalite and carnotite probably originated during the period of hot water circulation following the intrusion, the carnotite seems to antedate the former.

The Palisades is a trap (diabase) intrusion of Triassic age that forms a nearly continuous cliff along the west bank of the Hudson River for over thirty miles in Hudson and Bergen Counties of New Jersey and Rockland County of New York. The locality cited here is in southeastern Bergen County.

1. Manchester, James G., *Minerals of New York City and Its Environs*, New York, 1931.

The Palisades intrusion is important to collectors in other localities not only because rocks of related age and composition are found at many places in the East, but because its structure and metamorphic products are generally typical of all large trap intrusions.

Soufriere Volcano on St. Vincent

St. Vincent is an island in the British West Indies. It was discovered by Columbus in 1498, on Jan. 22nd (St. Vincent's Day, hence the name of the island). It is 18 miles long, 11 miles wide, and has an area of 133 sq. miles. St. Vincent is 97 miles west of Barbados, another English island in the West Indies.

The island is of volcanic origin and has a backbone of thickly wooded mountains running from north to south. The highest point on the island is the Soufriere, a volcano 4,048 feet high, which is located at the northern end of St. Vincent.

On May 7th, 1902, after being quiescent since 1812, the volcano erupted so violently that nearly one-third of the island was devastated and 2,000 lives were lost. The ashes from the volcano were carried by an upper current of air for over 100 miles and so covered Barbados as to astonish all its natives. It is regretable to note that the next day, May 8th, 1902, Mont Pelee, on the French island of Martinique, 90 miles north of St. Vincent, also burst into violent eruption causing one of the greatest destruction of property and lives in the western hemisphere.

The volcano is often visited by tourists and scientists although it is a most laborious climb. The crater is a vast pit 9/10 mile in diameter, over 2,000 feet deep, and has a large, beautiful lake in it.

Club and Society Notes

Los Angeles Lapidary Society

Mr. Harry Ringwald, past president of the L. A. Lapidary Society, was quite surprised when the R. K. O. studio rang up and asked to rent his lapidary outfit. They explained that it was to be used in making a picture. Mr. Ringwald was also greatly pleased when he received $150 for the rental of his equipment for 6 days. One never knows when one's hobby may earn an honest penny.

Under the direction of Mr. Ben Mabin, field trip chairman, an unusual field trip was held at the Harvard Playground Auditorium, September 24, 1944. Several of the members brought their equipment and demonstrated the various steps in the polishing of stones. A large number of the members saw the excellent technique of the lapidary art as demonstrated by Mr. H. G. Kirkpatrick, who had his sander and polishing wheel in operation; Mr. Rosenberg with his two grinding wheels; Mr. Charles Maples demonstrated the intricate work of faceting; Mrs. Peters cut and polished a beautiful agate heart; and Mrs. Bennett showed how her lap could be used with changeable discs. Mr. McCornack showed his automatic drill press and drilled some holes during the afternoon. The occasion was enjoyed by all and was considered a most profitable meeting.

CHARLES G. SCHWEITZER,
Editor & Librarian
5933 Miramonte Boulevard,
Los Angeles 1, California

East Bay Mineral Society

The East Bay Mineral Society of Oakland, California, is really moving. We got off to a good start in our 1944-45 season when Mr. Whalley opened it with his beautiful colored slides of a trip made through the Mojave desert and Death Valley some four years ago.

On September 17 the Society held its sixth birthday party at Ennor's cafe in Berkeley, California, with the present secretary, Buster Sledge, Sr., reading the minutes of the first meeting held August 31st, 1938, and our first secretary, Mrs. F. W. Buhn, cutting the huge lighted birthday cake.

Robert O. Deidrick, vice-president, acted as master of ceremonies as our president, Orlin J. Bell, is now temporarily in Utah on government work. Our guests were Dr. Austin F. Rogers, of Stanford University, and Dr. and Mrs. Adolph Pabst, of the University of California. Following the dinner Dr. Pabst held open house for us at Bacon Hall on the U. C. campus where the university has its minerals housed.

We were again honored by Dr. Pabst on September 21 when he talked on "Mineral collecting in Norway." Dr. Pabst exhibited specimens he perosnally collected on his trip to Norway.

We plan many activities for the coming year including local field trips, evenings once a month devoted to instruction for our beginners, and a new innovation, in charge of Mrs. Natalie Mahoney, of an outstanding mineral exhibit at each meeting of specimens collected and displayed by one of our own members.

Any one visiting in Oakland or vicinity are welcome to attend our meetings which are held in the Lincoln School Auditorium 11th and Jackson Sts. on the first and third Thursdays of each month.

B. E. SLEDGE, SR.,
Secretary.

State Mineral Society of Texas

The State Mineral Society met on Sept. 23rd and 24th at the home of President and Mrs. A. E. (Bill) Curry, San Angelo, Texas. The Curry estate is located 5 miles out on the San Antonio Highway.

Visitors from all parts of the State, prospective members and members of other societies in other States, who are at present located in Texas, helped to swell the total present to over 450.

Mr. Curry's Museum is the most beautiful in this section of the country. His crystal collection is too wonderful to describe in words. We are proud of the fact that so many of his huge and colorful specimens are our own Texas product.

Among the best of the out-of-town collections were those of Mr. Danielson of Muleshoe, Mr. Hoskins of Eden, and Mrs. Owens of Honey Grove.

Mr. Danielson has the nicest display of Asbestos and Tiger Eye anyone in this section has ever seen. He has a wonderful collection of clear, beautiful Iceland spar. Also in his collection were some beautiful book ends made from the colorful petrified wood of Arizona.

Mr. Hoskins had a large display of quartz crystal clusters.

In Mrs. Owens' display was a wonderful piece of colorful carborundum, in addition to many other rare and unusual pieces.

We feel sorry for any member who missed the wonderful eats. Barbecued chicken

and all the trimmings, including Pecan Pie.

At the business meeting Saturday it was decided to hold the next meeting after the war, time and place to be voted on later, but probably at Austin, Texas, our State Capital.

Officers of the State Mineral Society of Texas are: President, A. E. Curry, Wall Road, San Angelo, Texas; Vice-president, L. H. Bridwell, Box 44, Forestburg, Texas; secretary-treasurer, Mrs. Viola Block, 829 W. Jefferson, Dallas, 8, Texas; historian, Mrs. Edith Owens, 380 S. 6th Street, Honey Grove, Tex.; directors: D. W. Danielson, Muleshoe; Vance C. Tankersley, Miles; F. G. Hoskins, Eden; William F. Dukes, Fort Worth; Milton L. Silberstein, Houston; Floyd V. Studer, Amarillo.

Lynn Mineral Club

The Lynn Mineral Club met at the home of Mr. and Mrs. Lewis Speed, of Saugus, Mass., on Saturday, Sept. 23, 1944 for a baked beans supper. The regular monthly meeting followed the supper. Plans were completed for the 4th Public Library exhibit of minerals sponsored by the club.

The balance of the evening was spent in inspecting new lapidary equipment and jewelry making equipment of the host and hostess and examining new specimens.

The Lynn Mineral Club owes its existence to Messrs. Spear, King, Jacobs, and Day who met at the home of Mr. Lester Spear in Lynn, Mass., on Feb. 29, 1941, for the purpose of mineral study. The membership grew and officers were elected on Sept. 10, 1941. There are now 25 members. Meetings are on the 4th Saturday of the month at the homes of members. There are no dues. Business meetings are brief and informal after which the host takes charge with his plans for the evening. A buffet lunch is furnished by the hostess.

MRS. LEWIS J. SPEED, Sec.

Mineral Society of Utah

The Society has just released its official journal, *News Bulletin of the Mineralogical Society of Utah,* (Vol. 5, No. 2, September, 1944). This issues is called the "Tintic Number" as many of its fine articles are devoted to Utah's famous Tintic mining district.

The editing committee, of which Mrs. Lillian M. Lockerbie is chairman, has produced another interesting edition and it should be congratulated. The new issue contains 48 pages, 2 illus., and 1 map. Copies (if available), may be obtained from Mrs. Lockerbie, 223 W. 9th South, Salt Lake City, Utah.

Junius J. Hayes is the president of the Society.

Ringing Rocks of Bucks County, Pa.

In northern Bucks County, of southeastern Pennsylvania, and about 2 miles west of the village of Upper Black Eddy, are a group of diabase boulders which are known as the Ringing Rocks. These are so called because when struck with a hammer many of them give off metallic ringing sounds—some very clear and bell-like. All tones are not the same—they vary in intensity and sound—so that it is possible to play simple tunes if a group of people are stationed over the field in which the boulders lie and to strike at the right time those rocks whose proper tones are desired.

Many geologists have visited the locality and have tried to determine why some of the rocks ring (some will not). No satisfactory explanation has as yet been made.

The Ringing Rocks and much of the property surrounding them are owned by the Bucks County Historical Society.

Monazite Sand from Travancore, India

Travancore is a state in the extreme southwestern tip of India. Along the sea beaches of south Travancore, monazite sands occur for a distance of almost 80 miles. These sands contain, also, zircon and ilmenite and are dug commercially for the ilmenite. It is interesting to note that the deposits are renewed several times a year by the sea.

Monazite is widely distributed over Travancore but is concentrated especially on the sea coast—in some places it constitutes about 50% of the sand.

Monazite is a phosphate of cerium, lanthanum, thorium, yttrium, etc. It is chiefly brown in color; the Travancore sands are a light brown.

Mt. Pelee, Martinique

(*Continued from Page* 348)

odors—if these vapors issue from a cave-like aperture one can crawl into it to warm his chilled body. From the fumeroles, a collector may obtain aphthitalite, thenardite, sulphur, and other minerals frequently found around fumeroles.

. . . With Our Dealers . . .

Hatfield Goudey, of Yerington, Nev., is back with us again after an absence of some months. In the meantime he has acquired a nice stock of choice specimens for micro-mount collectors.

The old Gem Shop and Western Mineral Service, of Helena, Mont., have been discontinued and the business will be continued by the proprietor, A. J. Harstad, under his own name.

The H. E. Powell Co., of Little Rock, Ark., are featuring aluminum oxide (a polishing agent) and also announce the purchase of the entire Stewart collection of Indian artifacts.

Ward's, of Rochester, N. Y., have as usual set aside some desirable mineral specimens for our readers. How many are you going to order?

A new advertiser this month is Yellowstone Lapidary, of Miles City, Mont. And this firm will surely intrigue our readers with their offerings of nice Montana agates.

The field man for R. L. Taylor, of Battle Mountain, Nev., was sure lucky in stumbling upon a pocket of most beautiful orpiment and realgar. And you will be lucky to get some specimens if you do not send in your order right away.

Another new advertiser this month is Marvin's Rock Shop, of Durango, Colo., who can furnish rare Colorado minerals and do silversmithing and custom cutting.

Splendid Specimens—and no mistake about it either! For sale by the Wiener Mineral Co., of Tucson, Ariz.

Gem materials from the greatest variety we have ever offered—Warner & Grieger, of Pasadena, Calif.

Mexican minerals—two nice items featured this month by the West Coast Mineral Co., of La Habra, Calif.

Some nice cutting specimens—from their large stock of western minerals—are offered collectors this month by the Western Mineral Exchange, of Seattle, Wash.

Choice mineral specimens for museums and advanced collectors—2 pages of them—are advertised this month by Everts L. Horton, of Bethesda, Md.

Frank Duncan and daughter, of Terlingua, Texas, have a number of rare mercury minerals from their locality. Send the young lady an order for some of them!

For Christmas—Give Books! A very good suggestion from Charles O. Fernquist, of Spokane, Wash. How many do you need from his list?

E. Mitchell Gunnell, of Denver, Colo., is with us again and he has an item of special interest to crystal collectors.

Christmas is coming—so tell us Ozark Biological Laboratories, of Hot Springs National Park, Ark. Why not buy ourselves a present from among their large selection of quartz specimens!

The Eastern Mineral Exchange, of Bethlehem, Penn., announce that they have received another shipment of choice New York celestites.

Robert Roots, of Denver, Colo., is featuring some Colorado specials this months. Colorado minerals are always of special interest to collectors.

Schortmann's Minerals, of Easthampton, Mass., are suggesting to readers that a most appropriate gift this Christmas would be a Mineralight, Why don't you buy several of them for those good collector-friends of yours and include one for yourself, too?

Another new advertiser this month is R. E. Lamberson, of Oakland, Calif., who has some very fine gem agates to intrigue our readers.

Smith's Agate Shop, of Portland, Ore., has been in business for 30 years. No wonder lapidaries—amateur and professional—trade with confidence with this firm.

Gem Quality Chalcocite and Covellite found in Alaska

Chalcocite and covellite are both copper sulphides and are common in many copper mines but gem quality material is rare.

In the copper mines at Kennicott, Alaska, are found the finest gem quality chalcocite and covellite known. Here the minerals occur in such large, pure massive pieces—which take an excellent polish—that they are extensively used for ornaments, paper weights, book ends, gems, etc.

Chalcocite is grayish-black in color, covellite is indigo-blue. Both minerals are important copper ores at many mines throughout the world.

Gem Beryl Once Found in Philadelphia, Penn.

Gem beryls, from which nice stones have been cut, were once found in Philadelphia, Penn., in Fairmont Park, Germantown, Logan, Mt. Airy, and Shawmont. The beryls occurred in pegnatite dikes.